



March 2, 2017

Document Control Desk
U.S. Nuclear Regulatory Commission
Washington, DC 20555-0001

Subject: Request changes to NBSR Technical Specifications to allow low power testing.

Ref: Docket 50-184, TR-5 Facility License

Sirs/Madams:

The NIST Center for Neutron Research (NCNR) Test Reactor (NBSR) requests several changes to the TR-5 facility license technical specifications (TS).

The first group of these modifications are to the TS that specify the exemptions that are necessary to remove the apparent limitations in the present version of the TS. These limitations prohibit the use of a test procedure that is basic to the safe operation of NBSR. The approach-to-critical testing and TS 2.2(4) reactor operation is necessary to verify characteristics of an unknown core loading. The procedure is a variation of Start-up Test # 201 which was used during first start-up testing performed during the commissioning of the NBSR. The shims are replaced every 4 years because of burn-up of the cadmium poison. After installing the new shims, the core is conservatively defined as an unknown loading. Using an approach to critical during the fuel reload provides assurance that the characteristics of the core loading are within the specified parameters of safe reactor operation. The following Technical Specifications are to be modified:

TS 2.2, Limiting Safety System Settings will be clarified to show that conformance with 2.2 (4) conforms with specification (1) and renders the systems that provide the flow and temperature parameters (2) and (3) inoperable.

TS 3.1.3, Core Configuration will be changed to allow for low power operation without a full core loading for approach-to-critical testing and TS 2.2(4) reactor operation. This change also removes the objective of TS 3.1.3 to prevent broken shim arms from leaving the core. Reassessment of design, quality assurance in the manufacture of the shim arms, and the extensive operating experience with them, finds it is extremely unlikely shims will break during operation permitted by TS 2.2(4).

TS 3.2.2 (3), (4), (5), (8), Reactor Safety System Channels will be annotated with exceptions to allow low power operations with reactor level and flow SCRAMs, and reactor outlet temperature rundowns bypassed.

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TS 3.3.1, Coolant System, Primary and Secondary will be changed to include an exception for approach-to-critical testing and TS 2.2(4) reactor operation with reactor vessel level as low as the top of the dump tube.

TS 3.3.2, Emergency Core Cooling will be changed to provide an exception and clarify that there is adequate D₂O emergency core cooling available for approach-to-critical testing and TS 2.2(4) reactor operation even if the inner reserve tank is drained.

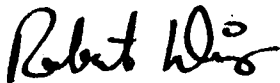
TS 3.7.1(2), (3), Monitoring Systems and Effluent Limits will be changed to provide an exception and clarify that even though the fission product monitor and the secondary coolant activity monitors are not operable during approach-to-critical testing and TS 2.2(4) reactor operation, the two of three gaseous effluent monitors, normal air, irradiated air, and stack air, are adequate to assure detection of abnormal effluent radioactivity.

TS 3.9.2.1, Fuel Handling, Within the Reactor Vessel will be changed to provide an exception and clarify that if operation of the reactor with natural circulation cooling flow is necessary during approach-to-critical testing using TS 2.2(4) reactor operation, fuel element latching may be exempted since the force developed from pump flow is not present.

In addition to the changes listed above, Technical Specification Figure 6.1 will be modified to correct a previous error to show NBSR Health Physics has an administrative reporting channel to the NCNR Director.

Also a license change is requested in order to transfer the sources, necessary for reactor associated instrumentation calibration and testing, from the NIST SNM-362 license to the TR-5 license. This will assure that the availability of sources needed to perform the surveillance required for the safe operation of the reactor is not dependent on a licensee external to the TR-5 license.

Respectfully,



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I declare under penalty of perjury that the foregoing is true and correct.

Executed on March 2, 2017

By:  _____

cc: Xiaosong Yin, NRR/DPR/PRLB